ABSTRACT

A controller for managing bandwidth in a communications network is disclosed. The controller includes a service controller, a service interface to a service network element, and a facility interface to a transport network element. The controller works at three levels to optimize network resources. At the packet layer, the controller automatically sets up end-to-end MPLS paths, and dynamically balances the utilization of the paths by adjusting the bandwidth allocation and traffic and distribution on the paths. Between the optical and packet layers, the controller works to allow optical resources to be used directly by the packet layer to respond to congestion or increased demand at the packet layer.